AMENDMENTS TO THE CLAIMS

1. (**Currently Amended**) A detector for determining the presence of an oligonucleotide target**, said detector** ~~having a target nucleotide sequence~~ comprising;

an electrode capable of sensing redox events in a redox moiety and

an oligonucleotide probe immobilized on the electrode,

wherein the probe comprises ~~with the probe comprising~~ a redox moiety **and** ~~, the probe having~~ a probe nucleotide sequence which hybridizes with ~~the target~~ **a target** nucleotide sequence and,

in the absence of hybridization between the target and the probe, the redox moiety being located in a first position relative to the electrode and, in the presence of hybridization between the target and the probe, said redox moiety being located in a second position relative to the electrode, said first and second positions giving rise to distinguishable redox events detectable by the electrode wherein**, relative to the first position,** the second position **promotes electron transduction** ~~**provides more efficient electron transfer**~~ between the redox moiety and the electrode ~~**than the first position**~~.

Claims 2-6 (Canceled).

7. (**Currently Amended**) The detector of claim 1 wherein the probe is immobilized on the electrode at a position **on the probe** distant from the redox moiety.

8. (Original) The detector of claim 1 wherein the electrode is capable of inducing redox events in the redox moiety.

Claims 9-11 (Canceled).

12. (**Currently Amended**) The detector of claim 1 wherein second ~~**configuration**~~ **position results from a probe configuration comprising** ~~**comprises**~~ internal hybridization between two regions in the probe.

13. (**Currently Amended**) The detector of claim 1 wherein the second ~~configuration~~ **position results from a probe configuration including** ~~comprises~~ a loop comprising a region of the target and a region of the probe.

14. (Original) The detector of claim 1 wherein the electrode comprises a metal.

15. (Original) The detector of claim 14 wherein the metal is gold.

16. (Previously Presented) The detector of claim 1 wherein the redox moiety is selected from viologen, anthraquinone, ethidium bromide, daunomycin, methylene blue, organo-metallic redox labels, ferrocene, ruthenium, bis-pyridine, tris-pyridine, bis-imidizole, cytochrome c, plastocyanin, or cytochrome c'.

Claims 17-24 (Canceled).

25. (**Currently Amended**) A detector for determining the presence of a an oligonucleotide~~, target having a target nucleotide sequence~~ said detector comprising;

an electrode capable of sensing redox events in a redox moiety and an oligonucleotide probe comprising a first region, a second region and a third region, the first region being immobilized upon or proximate to the electrode, the third region being bound to a redox moiety,

the second region being present in the probe intermediate the first and third regions and comprising a first nucleotide sequence which is complementary to and spaced apart from a second nucleotide sequence with which it self hybridizes to form a first loop which positions the redox moiety a first distance from the electrode, said first nucleotide sequence also capable of hybridizing to the target nucleotide sequence in the target, such hybridizing with the target disrupting the first loop and permitting complementary nucleotide sequences in the second region to self hybridize to form a second loop which positions the redox moiety a second distance from the electrode, said first and second distances giving rise to distinguishable redox events detectable by the electrode, wherein**, relative to the first**

distance, the second distance **promotes electron transduction** ~~**provides more efficient electron transfer**~~ between the redox moiety and the electrode ~~**than the first distance**~~.

Claims 26-27 (Canceled).

28. (Original) The detector of claim 25 additionally comprising a detector for detecting electron transduction between the electrode and the redox moiety when the second loop is formed.

29. (Original) The detector of claim 28 additionally comprising an indicator for inducing electron transduction between the electrode and the redox moiety when the second loop is formed.

30. (Original) The detector of claim 29 wherein the first region is at one end of the probe.

31. (Original) The detector of claim 29 wherein the third region is at the second end of the probe.

32. (Previously Presented) The detector of claim 25 wherein the electrode comprises a metal.

33. (Previously Presented) The detector of claim 32 wherein the metal is gold.

34. (Previously Presented) The detector of claim 33 wherein the redox moiety is selected from viologen, anthraquinone, ethidium bromide, daunomycin, methylene blue, organo-metallic redox labels ferrocene, ruthenium, bis-pyridine, tris-pyridine, bis-imidizole, cytochrome c, plastocyanin, or cytochrome.

Claims 35-38 (Canceled).

39. (Withdrawn) A method for detecting the presence of an oligonucleotide target having a target nucleotide sequence in a sample comprising:

obtaining a detector for determining the presence of an oligonucleotide target having a target nucleotide sequence comprising;

an electrode capable of sensing redox events and an oligonucleotide probe immobilized on the electrode,

the probe comprising a redox moiety, the probe having a probe nucleotide sequence which hybridizes with the target nucleotide sequence and,

in the absence of hybridization between the target and the probe, the redox moiety being located in a first position relative to the electrode and, in the presence of hybridization between the target and the probe, said redox moiety being located in a second position relative to the electrode, said first and second positions giving rise to distinguishable redox events detectable by the electrode,

contacting the sample under oligonucleotide hybridization conditions with the detector and sensing redox events in the redox moiety with the electrode in the presence of the sample and in the absence of the sample and,

correlating similarity of redox events in the absence of the target and the presence of the target, wherein the target is associated with the probe and the sensing of the presence of the target is correlated with a change in redox events.

40. (Withdrawn) A method for detecting the presence of an oligonueleotide target having a target nucleotide sequence in a sample comprising:

obtaining a detector for determining the presence of an oligonucleotide target having a target nucleotide sequence comprising;

an electrode capable of sensing redox events and an oligonucleotide probe immobilized on the electrode,

the probe comprising a redox moiety, the probe having a probe nucleotide sequence which hybridizes with the target nucleotide sequence and,

in the absence of hybridization between the target and the probe, the redox moiety being located in a first position relative to the electrode and, in the presence of hybridization between the target and the probe, said redox moiety being located in a second position

relative to the electrode, said first and second positions giving rise to distinguishable redox events detectable by the electrode,

contacting the sample under oligonucleotide hybridization conditions with the detector and sensing redox events in the redox moiety with the electrode and,

correlating the sensed redox event with the presence or the absence of the target wherein the target is associated with the probe and the sensing of the presence of the target is correlated with a change in redox events.

Claim 41-46 (Canceled).

47. (Withdrawn) A method for detecting the presence of an oligonucleotide target having a target nucleotide sequence in a sample comprising:

obtaining a detector for determining the presence of a oligonucleotide target having a target nucleotide sequence said detector comprising;

an electrode capable of sensing redox events and

an oligonucleotide probe comprising a first region, a second region and a third region,

the first region being immobilized upon or proximate to the electrode,

the third region being bound to a redox moiety,

the second region being present in the probe intermediate to the first and third regions and comprising a first nucleotide sequence complementary to and spaced apart from a second nucleotide sequence with which it self hybridizes to form a first loop which positions the redox moiety a first distance from the electrode, said first nucleotide sequence also hybridizing with the target nucleotide sequence in the target, such hybridizing with the target disrupting the first loop and permitting complementary nucleotide sequences in the second region to self hybridize to form a second loop which positions the redox moiety a second distance from the electrode, said first and second distances giving rise to distinguishable redox events detectable by the electrode,

contacting the sample under oligonucleotide hybridization conditions with the detector and sensing redox events with the electrode in the presence of the sample and in the absence of the sample and,

correlating similarity in redox events between the absence of the target and the presence of the target wherein the target is associated with the probe and the sensing of the presence of the target is correlated with a change in redox events.

48. (Withdrawn) A method for detecting the presence of an oligonucleotide target having a target nucleotide sequence in a sample comprising:

obtaining a detector for determining the presence of a oligonucleotide target having a target nucleotide sequence said detector comprising;

an electrode capable of sensing redox events and

an oligonucleotide probe comprising a first region, a second region and a third region,

the first region being immobilized upon or proximate to the electrode,

the third region being bound to a redox moiety,

the second region being present in the probe intermediate the first and third regions and comprising a first nucleotide sequence which is complementary to and spaced apart from a second nucleotide sequence with which it self hybridizes to form a first loop which positions the redox moiety a first distance from the electrode, said first nucleotide sequence also hybridizing with the target nucleotide sequence in the target, such hybridizing with the target disrupting the first loop and permitting complementary nucleotide sequences in the second region to self hybridize to form a second loop which positions the redox moiety a second distance from the electrode, said first and second distances giving rise to distinguishable redox events detectable by the electrode,

contacting the sample under oligonucleotide hybridization conditions with the detector and sensing redox events in the redox moiety with the electrode and,

correlating the sensed redox event with the presence or the absence of the target wherein the target is associated with the probe and the sensing of the presence of the target is correlated with a change in redox events.

Claims 49-54 (Canceled).

55. (Withdrawn) A method for authenticating an object comprising:

obtaining a detector for determining the presence of an oligonucleotide target having a target nucleotide sequence comprising;

an electrode capable of sensing redox events and an oligonucleotide probe immobilized on the electrode,

a probe comprising a redox moiety, the probe having a probe nucleotide sequence which hybridizes with the target nucleotide sequence and,

in the absence of hybridization between the target and the probe, the redox moiety being located in a first position relative to the electrode and, in the presence of hybridization between the target and the probe, said redox moiety being located in a second position relative to the electrode, said first and second positions giving rise to distinguishable redox events detectable by the electrode,

associating the object with the target,

sensing the presence of the target associated with the object; and

correlating the sensing of the presence of that target oligonucleotide with a change in redox events.

56. (Withdrawn) The method of claim 55 wherein the sensing is carried out in the presence of masking oligonucleotides.

Claim 57-58. (Canceled).

59. (Withdrawn) A method for authenticating an object comprising:

obtaining a detector for determining the presence of a oligonucleotide target having a target nucleotide sequence said detector comprising;

an electrode capable of sensing redox events and

an oligonucleotide probe comprising a first region, a second region and a third region,

the first region being immobilized upon or proximate to the electrode, the third region being bound to a redox moiety,

the second region being present in the probe intermediate the first and third regions and comprising a first nucleotide sequence which is complementary to and spaced apart from

a second nucleotide sequence with which it self hybridizes to form a first loop which positions the redox moiety a first distance from the electrode, said first nucleotide sequence also hybridizing with the target nucleotide sequence in the target, such hybridizing with the target disrupting the first loop and permitting complementary nucleotide sequences in the second region to self hybridize to form a second loop which positions the redox moiety a second distance from the electrode, said first and second distances giving rise to distinguishable redox events detectable by the electrode,

associating the object with the target,

sensing the presence of the target associated with the object; and

correlating the sensing of the presence of that target oligonucleotide with a change in redox events.

60. (Withdrawn) The method of claim 59 wherein the sensing is carried out in the presence of masking oligonucleotides.

61. (Withdrawn) A method for authenticating an object comprising: obtaining a detector of claim 35, associating the object with the target, sensing the presence of the target associated with the object; and

correlating the sensing of the presence of that target oligonucleotide with the authenticity of the object.

62. (Withdrawn) The method of claim 61 wherein the sensing is carried out in the presence of masking oligonucleotides.